Habitat Testbed (HaT)

Completed Technology Project (2010 - 2012)

Project Introduction

A key capability of the Deep Space Habitat project is the Deep Space Habitat Testbed. The DSH Testbed serves as the proof of concept and early integration platform for Deep Space Habitation subsystems and technologies in a vehicle like context. Its purpose is to perform early integration and risk reduction of habitation systems while developing the capabilities needed for human exploration missions. The DSH Testbed also enables affordable development of DSH capability through partnerships and collaborations.

Goals of the DSH Testbed include: Function as a habitat systems integrator and technology pull across many domains Develop and integrate software-based models of habitat systems with system to system interdependencies Enable maturation of select habitat systems Integration of physical hardware where available Distributed testing to link to other facilities The DSH Testbed provides a place to build the instance of the DSH vehicle, and as a result provide integration testing of habitat subsystems and technologies in a vehicle-like context. Some of these technologies include: WSN Power Avionics Software Impact Detection Comm Crew Systems (Displays, TRWS, programmable lighting) Testing in an incremental fashion, subsystems can be added on to the core architecture, modularly removed and replaced, and finally matured. Subsystems also do not have to be physically present in order to be included in the testbed. The DSH Testbed is able to perform a combination of local and distributed connectivity to hardware and software to complete vehicle integration. Finally, subsystems can be varying maturity levels, and even exist as simulations. The DSH Testbed is able to host subsystem models and simulations and stress them in the integrated habitat context.

Anticipated Benefits

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Project Image Habitat Testbed (HaT)

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Center Innovation Fund: JSC CIF

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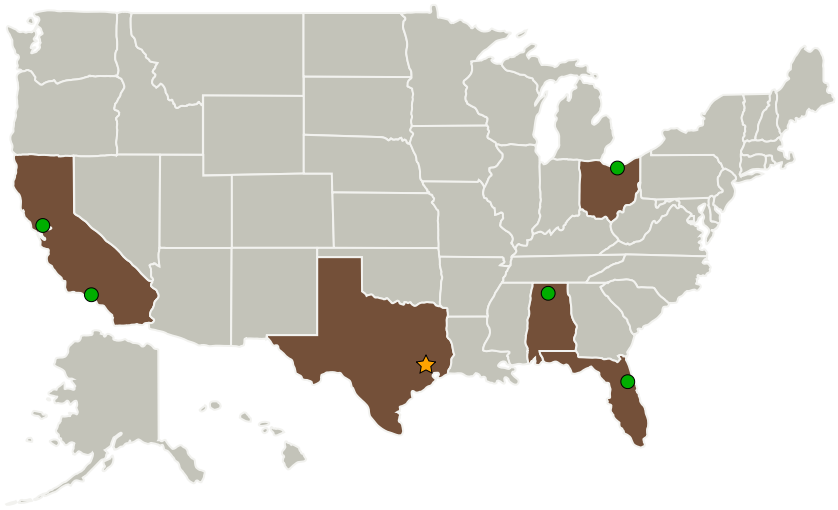
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
●Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California
●Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio
Jacobs Engineering Group, Inc.	Supporting Organization	Industry	Dallas, Texas
●Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California
●Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida
●Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Project Management

Program Director:
Michael R Lapointe

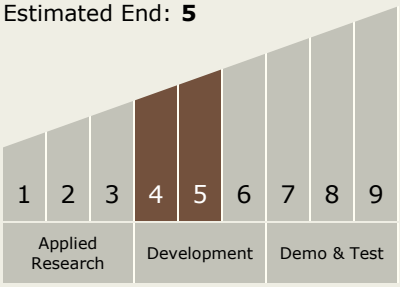
Program Manager:
Carlos H Westhelle

Project Manager:
Daniel B Carrejo

Principal Investigator:
Daniel B Carrejo

Technology Maturity (TRL)

Start: **4**
Estimated End: **5**



Technology Areas

Primary:

- TX10 Autonomous Systems
  - TX10.2 Reasoning and Acting
    - TX10.2.5 Fault Diagnosis and Prognosis

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Primary U.S. Work Locations	
Alabama	California
Florida	Ohio
Texas	

Images

12148-1379535324069.jpg
Project Image Habitat Testbed (HaT)
(https://techport.nasa.gov/image/2303)